**Analysis of scattered light from multiple blades and V-grooved laser dumps in Thomson scattering diagnostic**

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The measurement of the Thomson scattering signal and the absolute calibration of the system are both easily disturbed by the stray light. Stray light mainly comes from the end of the laser beam, especially for the system with the laser beam terminated inside the vacuum vessel of the device. A laser dump is essential optics of this system for terminating the laser beam. The multiple blades and V-grooved structure on laser dump have an advantage of reducing the heat through multiple wall surfaces, yet the wall edge of dump is easy to produce scattered light. So, the distribution and intensity of escaping scattered light from these two dumps are analyzed and simulated. Firstly, based on the optical theory, the characteristic of beam transmission and the intensity of escaping specularly reflected light in these two structures are analyzed. And then based on an optical-mechanical simulation model of the laser dump, the distribution and intensity of escaping scattered light from these two dumps and the scattered light on the wall surface are simulated. The results indicate that (i) as the depth of the laser beam entering the dump increases, the intensity and the distribution of escaping scattered light decrease for these two structures, (ii) the intensity and the maximum irradiance of escaping scattered light from the V-groove structure is less than that from the multiple blades structure, (iii) the intensity and the maximum irradiance on the wall surface are similar for the two structures, but the heat will focus on the bottom for the V-groove structure, (iv) there is a suitable number of wall edges for the dump to obtain the lowest intensity of escaped light. The research has important implications for the dump design of Thomson scattering diagnostic system.